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CASE REPORT

Non union of a fractured os trigonum

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Introduction

A 21-year-old man was presented with a history of an inversion injury accompanied by an audible crack playing football the previous day.

On examination, tenderness was noted over the postero-medial aspect of the talus. Ankle movements were only slightly restricted and not painful. Radiographs revealed a fracture of the posterior process of talus (Fig. 1).

He was treated with a back slab for 4 days and then ankle support with advice to weight bear according to pain levels. He was re-assessed 3 weeks later and at this stage was pain free, had just slight limitation of inversion and was discharged to physiotherapy.

He represented 1 year later complaining of persisting pain at the same site. Pain was worse on uneven ground, the ankle would swell, and he had been unable to return to football. There were no signs suggestive of peroneal tendonitis and the peripheral neurovascular status was entirely normal.

A radiographic examination raised suspicion that the fracture of the fused os trigonum had not united. He was investigated further by CT (Fig. 2) and a bone scan (Fig. 3a and b), which confirmed a non union.

A trial of conservative treatment with a short-leg cast and physical therapy failed to relieve the pain. It was, therefore, decided to excise the ununited fragment. The talus was exposed through a posterolateral approach. There was a typical fibrous non union between the posterior talus and the os trigonum and the latter was, therefore, excised.

Progressive improvement in the symptoms was noted after surgery. On the last follow-up, 3 months following surgery, the patient demonstrated complete recovery with no pain; almost full range of movement and no functional restriction.

Discussion

The os trigonum is an enlargement or elongation of the posterior process of the talus. It is found in almost 50% of feet and can be free or fused to the posterior aspect of talus.[4] Os trigonum fractures have been repeatedly overlooked with the pain being attributed to peroneal or achilles tendonitis. Injury to the ankle leading to a fracture of the fused os trigonum is extremely rare[5,7] and may be confused with an unfused ossicle.

Os trigonum, was first described by Rosenmuller in 1804.[6] It is radiologically detectable between the 8th and 10th years of life.[8] Kohler and Zimmer[3] suggested that the posterior process of the talus is actually made up of two parts, the lateral tubercle and the os trigonum, both often uniting to form one bone. In the past, the free os trigonum has been regarded as a fracture (Shepherd's fracture).[9] Shep-

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Figure 1 Lateral radiograph of ankle showing a fractured os trigonum.

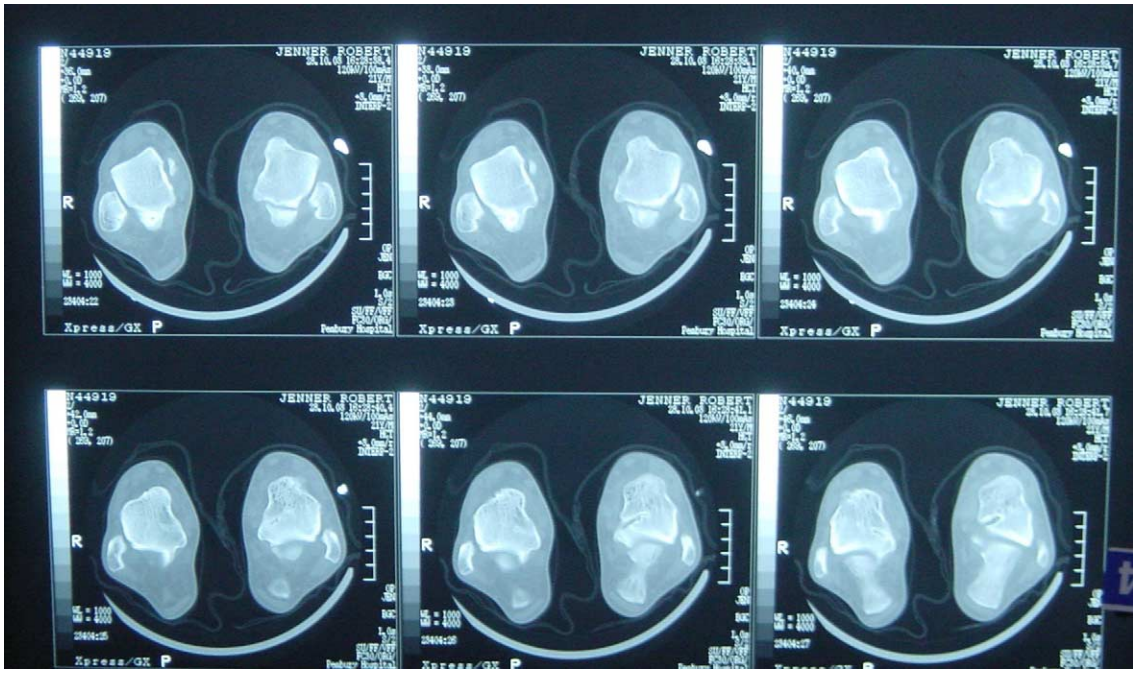

Figure 2 CT scan showing an un-united fracture of the left os trigonum.

herd, himself, later realized that it was not a fracture, but a free os trigonum. It may be present symmetrically (fused or free) on both sides. However, it is not uncommon to find a fused os trigonum on one foot and a free one on the other.

A fracture of the fused os trigonum results from a twisting injury while the ankle is in equinus position. The patient almost always presents with pain around the ankle, which is exacerbated on weight bearing and increased plantarflexion.[1] In the acute stage, there may be gross painful restriction of movement due to muscle spasm,[4] crepitus and occasionally an area of ecchymosis may be seen anterior to the achilles tendon.[5] A clear history combined with a detailed clinical and radiological assessment is necessary to diagnose this injury. A trial of conservative treatment may result in complete recovery.[4] However, long-standing pain following an os trigonum fracture suggests non union of this ossicle and may require surgical intervention as demon-

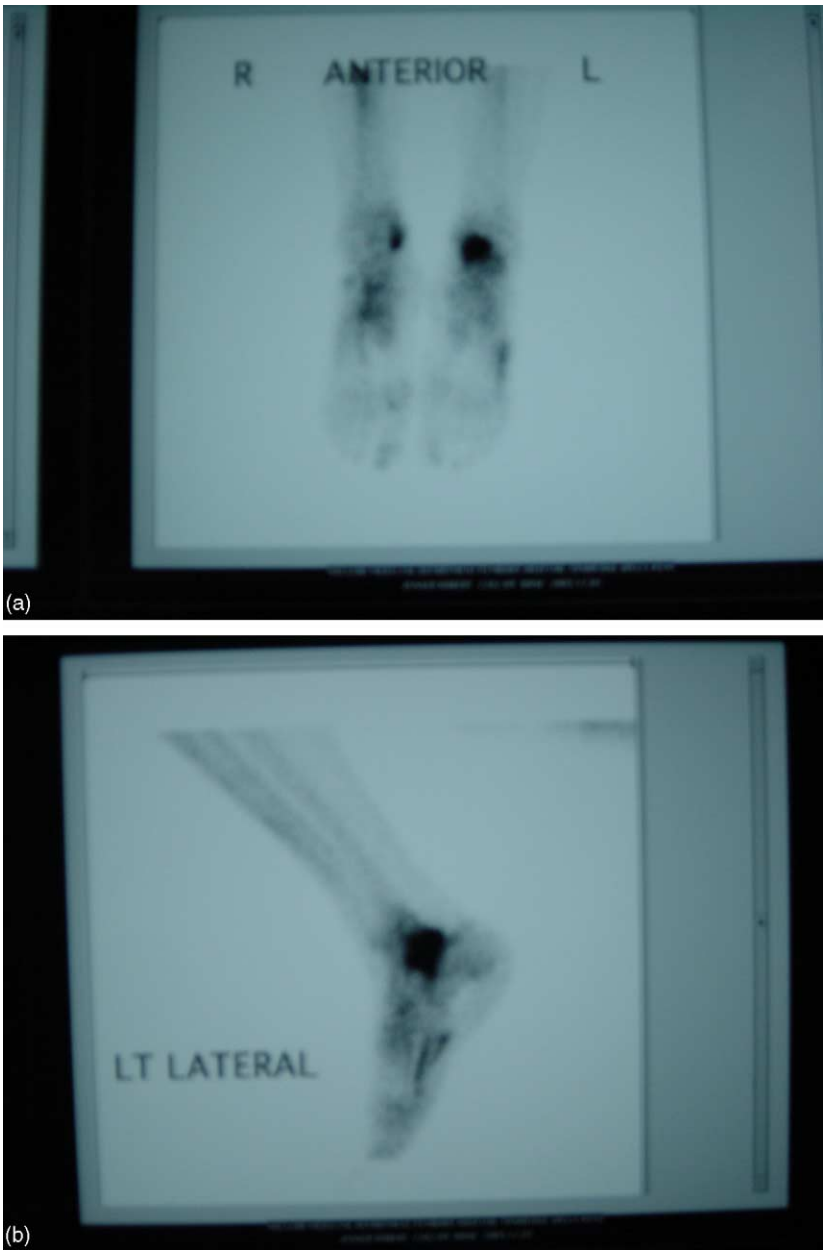

Figure 3 (a,b) Isotope bone scan demonstrating increased uptake in the left os trigonum.

strated. We have only found one other report of a surgicaltreatment of a fracture of the fused os trigonum[2] where removal of a fragment 6 months after injury resulted in a full recovery.

Conclusions

A high index of suspicion is necessary for the diagnosis of a fracture of os trigonum, with a severe plantarflexion injury to the ankle. However, being a common cause it should not be confused with the unfused os trigonum. Conservative treatment should be instituted early, and is usually successful. If symptoms persist, a non union should be considered. If symptomatic non union does occur, it can be successfully treated by excision of the un-united fragment.

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